

INDUSTRY OVERVIEW

The information and statistics set out in this section and other sections of this Document were extracted from the Frost & Sullivan Report prepared by Frost & Sullivan, which was commissioned by us, and from various official government publications and other publicly available publications. We engaged Frost & Sullivan to prepare the Frost & Sullivan Report, an independent industry report, in connection with the [REDACTED]. The information from official government sources has not been independently verified by us, the Sole Sponsor, the [REDACTED] or any of their respective directors and advisers, or any other persons or parties involved in the [REDACTED], and no representation is given as to its accuracy.

SOURCE AND RELIABILITY OF INFORMATION

We engaged Frost & Sullivan, an independent market research consultant, to conduct an analysis of, and to prepare a report on, the global and China’s intelligent agricultural machinery and smart agriculture industry for use in this Document (the “**Frost & Sullivan Report**”), which was commissioned by us for a fee of RMB450,000. In compiling and preparing the Frost & Sullivan Report, Frost & Sullivan adopted the following assumptions: (i) the global social, economic and political conditions currently discussed will remain stable during the forecast period; (ii) government policies on the global and China’s intelligent agricultural machinery and smart agriculture market will remain consistent during the forecast period; and (iii) the global and China’s intelligent agricultural machinery and smart agriculture market will be driven by the factors which are stated in this report in the forecast period. Except as otherwise noted, all of the data and forecasts contained in this section are derived from the Frost & Sullivan Report. The Frost & Sullivan Report has been prepared by Frost & Sullivan independently without any influence from us or other interested parties.

Frost & Sullivan is an independent global consulting firm founded in 1961 in New York and its services include, among others, industry consulting, market strategic consulting and corporate training. Frost & Sullivan conducted (i) primary research, which involved discussing the status of the industry with certain leading industry participants, and interviews with industry experts on a best-efforts basis to collect information in aiding in-depth analysis; and (ii) secondary research, which involved reviewing company reports, independent research reports and data based on its own research database.

ANALYSIS OF GLOBAL AND CHINA’S INTELLIGENT AGRICULTURAL MACHINERY AND SMART AGRICULTURE INDUSTRY

Overview of Global and China’s Agriculture Industry

The global agricultural industry is unevenly developed and food security faces multiple challenges. The developed countries contributed 67% of total global agricultural output value and the problem of uneven development is prominent. At present, the global agricultural industry is facing the triple pressure of population growth, frequent occurrence of extreme weather events and tightening resource constraints, and food security is at stake with 920 million people around the world still in a state of serious food insecurity. There is still a significant gap between the level of agricultural machinery intelligence in China and that in Europe and the United States. For example, in the European and U.S. markets, the intelligent driving level of agricultural machinery has reached Level 3. In contrast, Level 1 intelligent

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driving has achieved large-scale commercial application in China, while Level 2 is still in the promotion stage. In the future, the smart agricultural technology system based on intelligent agricultural machinery will be the key path to meet the challenge of food security.

China is currently entering a new phase of development from traditional agriculture to modern agriculture.

As a country with a population of 1.4 billion, China faces a serious imbalance between food demand and farmland resources. The huge population base has induced rigid food demand. The dependency rates of imported oil crops and fodder such as soybeans remained high at 80%. As the level of agricultural modernization in China still lags behind as compared to its industrialization, how to address the problem of “food security” has become a national strategic priority.

China’s agricultural development faces acute challenges such as labor shortages and aging population. With the continuous decline in the number of agricultural workforce, the problem of “who to farm” is becoming increasingly prominent. With the continuous urbanization, the migration of young adult labor from rural areas to urban areas is accelerating in China. The number of agricultural workforce has plummeted from 180 million to 160 million. It is expected that the number of agricultural workforce will drop to 140 million by 2030 and may plummet to merely 30 million by 2050.

China’s agricultural operation model still lags significantly behind that of developed countries in Europe and America. The development of large-scale farming entities, specialized agricultural service organizations, and specialized equipment and technologies remains relatively backward, and the development of scientific farming is in a bottleneck.

The imbalance between food security and the development of agricultural productivity in turn drove an adjustment of the scalable field management and customer structure, accelerating transformation of traditional agriculture towards modern agriculture.

Driven by scalable field management, structural shifts in the customer base and the pursuit of high-quality development of agricultural production, intelligent agricultural machinery and smart farming are poised to seize a historic window of opportunity.

Traditional agricultural machinery equipment is transforming and upgrading towards large-scale, high-end, intelligent and green operation to promptly address the problem of “who to farm”.

China’s smart agriculture is accelerating its development towards integrated technical applications, which will become the core driving force for breaking through the bottlenecks of industry development and addressing the “how to farm scientifically”.

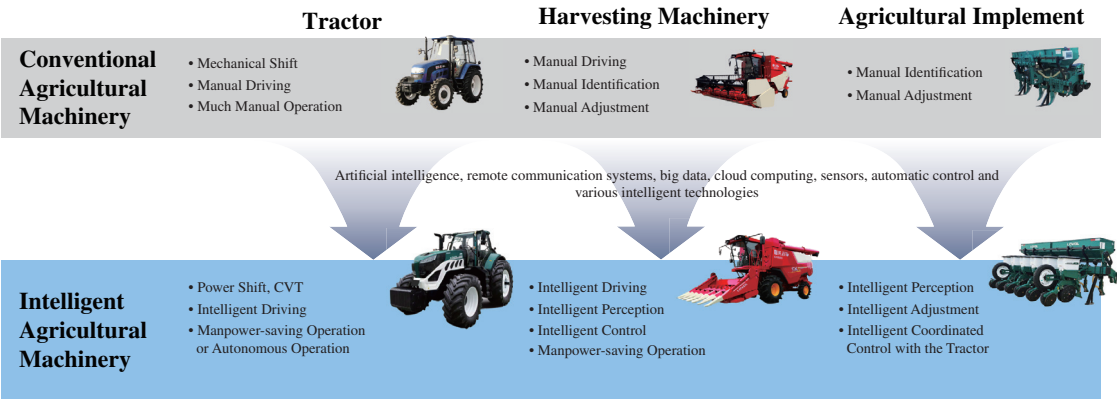
Definition and Classification of Agricultural Machinery

Agricultural machinery refers to a wide range of mechanical equipment used in agricultural production and the primary processing of agricultural products. It encompasses various stages of agricultural operations, including field preparing, planting, field management, harvesting, straw handling and grain drying. The major categories of agricultural machinery include tractors, harvesting machines and other agricultural implements.

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Intelligent agricultural machinery integrates modern information technologies such as artificial intelligence, remote communication systems, big data, cloud computing, sensors and automatic control with agricultural machinery, equipment and technologies, so as to achieve a new form of agricultural machinery system characterized by automated, precise and intelligent agricultural production processes. Intelligent tractors are built upon high-end drive-by-wire chassis platforms (including technologies such as power shift and continuously variable transmission (CVT)), enabling an upgrade from “manual transmission” to “automatic transmission.” On this basis, they are equipped with a range of intelligent modules including electro-hydraulic suspension systems, ISOBUS technology, remote communication systems, intelligent perception systems (typically capable of integrating and analyzing real-time operational and environmental data collected from sensors, cameras and radars installed on agricultural machinery), and intelligent driving systems to achieve intelligent control of both mobility and farming activities. Intelligent harvesting machinery is based on an integrated hydraulic or electro-hydraulic control walking system, and is typically equipped with several intelligent modules such as electro-hydraulic control system, remote communication system, intelligent perception system, intelligent driving system or precision operation system, enabling intelligent control over locomotion and harvesting activities. Intelligent agricultural implements generally refer to agricultural implements equipped with functions such as operation monitoring, intelligent control systems and ISOBUS technology.

Definition and Classification of Intelligent Agricultural Machinery



Analysis of Agricultural Machinery Market

Market Size of Agricultural Machinery

Agricultural Machinery Market Size Analysis

The agricultural machinery market primarily includes segments of tractors, harvesting machinery, and agricultural implements. In 2025, the total global sales revenue of agricultural machinery reached approximately RMB1.4 trillion, while the total sales revenue of agricultural machinery in China was approximately RMB300 billion. The following market size analysis of the agricultural machinery and intelligent agricultural machinery, as well as the comparative analysis of enterprises, primarily reflects the operating conditions of the key enterprises included in the statistics of the China Association of Agricultural Machinery Manufacturers.

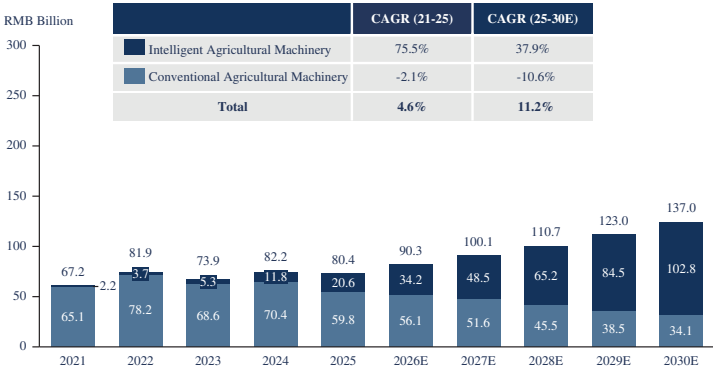
Intelligent Agricultural Machinery Market Size Analysis

China’s intelligent agricultural machinery market is currently at an early stage of development. In terms of sales volume in 2025, the penetration rate of intelligent agricultural machinery in the overall agricultural equipment market in China was approximately 12.3%.

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The sales revenue of intelligent agricultural machinery in China reached approximately RMB20.6 billion in 2025. The global intelligent agricultural machinery market achieved a degree of intelligence of approximately 32.1% in 2025 based on sales volume. This indicates significant growth potential for China’s intelligent agricultural machinery market. By 2030, the penetration rate of intelligent agricultural machinery in China is expected to reach approximately 33.8%. The market size of agricultural machinery and intelligent agricultural machinery is indicated in the chart as below.

Market Size of Agricultural Machinery and Intelligent Agricultural Machinery (in terms of sales revenue), China, 2021-2030E



Note: The market size of agricultural machinery in China, as shown in the charts, refers to the sales value of key enterprises included in the statistics of the China Association of Agricultural Machinery Manufacturers.

Source: China Association of Agricultural Machinery Manufacturers, Frost & Sullivan

Analysis of Competitive Landscape of Global and China’s Agricultural Machinery Industry

Competitive Landscape of the Agricultural Machinery Market

In terms of global agricultural machinery sales revenue in 2025, Weichai Lovol ranked seventh, accounting for a market share of around 1.3%. In terms of agricultural machinery sales revenue in China in 2025, the top five manufacturers accounted for a combined market share of 53.3%. Weichai Lovol ranked first with sales revenue of RMB18.0 billion and a market share of around 22.4%.

Ranking and Market Share of Agricultural Machinery Market (in terms of sales revenue), China, 2025

Rank	Company Name	Sales Revenue (RMB billion)	Market Share (%)
1	The Company	18.0	22.4%
2	Company A	10.8	13.5%
3	Company B	9.2	11.4%
4	Company C	2.7	3.4%
5	Company D	2.1	2.6%
	Others	37.6	46.7%
	Total	80.4	100.0%

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Note: This ranking includes key enterprises included in the statistics of recognized by the China Association of Agricultural Machinery Manufacturers.

Company A is a company located in Henan, China, primarily engaging in sales of tractors, harvesting machinery, diesel engines, and core components. It was established in 1955 and its major subsidiary is listed on both the Hong Kong and Shanghai Stock Exchanges.

Company B is a company located in Jiangsu, China, primarily engaging in sales of harvesting machinery, tractors, and related agricultural machinery. It was established in 2003 and is not listed.

Company C is a company located in Jiangsu, China, primarily engaging in sales of harvesting machinery, transplanters, tractors, and other agricultural machinery. It was established in 1998 and is owned by Japanese enterprises.

Company D is a company located in Tianjin, China, primarily engaging in sales of agricultural machinery. It was established in 2005 and is owned by an American agricultural machinery company.

Source: Company reports, Frost & Sullivan

Competitive Landscape of the Intelligent Agricultural Machinery

Based on intelligent agricultural machinery sales revenue in China in 2025, the top three manufacturers accounted for 64.3% of the total market share. Weichai Lovol ranked first with sales revenue of RMB7.9 billion, representing a market share of approximately 38.1%.

Ranking and Market Share of Intelligent Agricultural Machinery (in terms of sales revenue), China, 2025

Rank	Company Name	Sales Revenue (RMB billion)	Market Share (%)
1	The Company	7.9	38.1%
2	Company D	3.4	16.5%
3	Company C	2.0	9.7%
	Others	7.4	35.7%
	Total	20.6	100.0%

Source: Frost & Sullivan

Analysis of China’s Tractor Industry

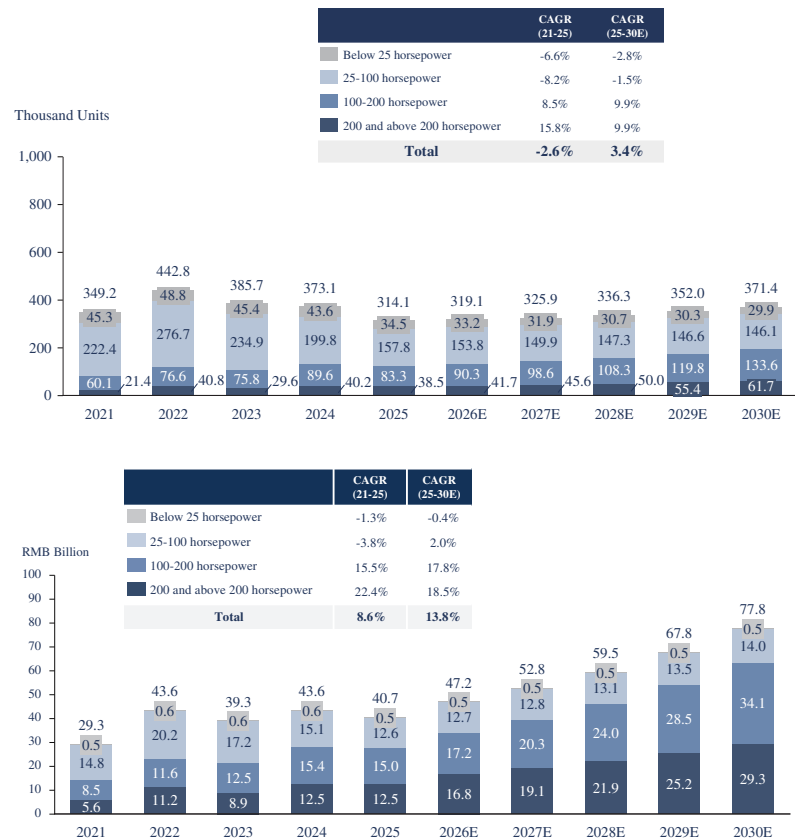
Market Size of Tractor

Tractor is among the most essential type of agricultural machinery. Typically comprising modules such as power systems, transmission systems, hydraulic systems, electronic systems, chassis and work devices, tractors are used for towing and driving various agricultural implements. Their core function is to provide power for agricultural production and are widely applied in dryland, paddy fields, orchards, and recreational agriculture.

By tractor horsepower category, the proportion of sales of medium and small tractors has declined in recent years, large tractors consistently demonstrated robust growth in both unit sales and revenue. Sales of high-horsepower tractors with 200 horsepower or more reached 38.5 thousand units in 2025, representing a CAGR of 15.8% from 2021 to 2025. This momentum is expected to continue, with projected CAGR of 9.9% from 2025 to 2030, further accelerating the transition toward higher horsepower and intelligent tractor solutions in China.

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Tractor Sales Volume and Revenue by Horsepower Segment in China (2021–2030E)

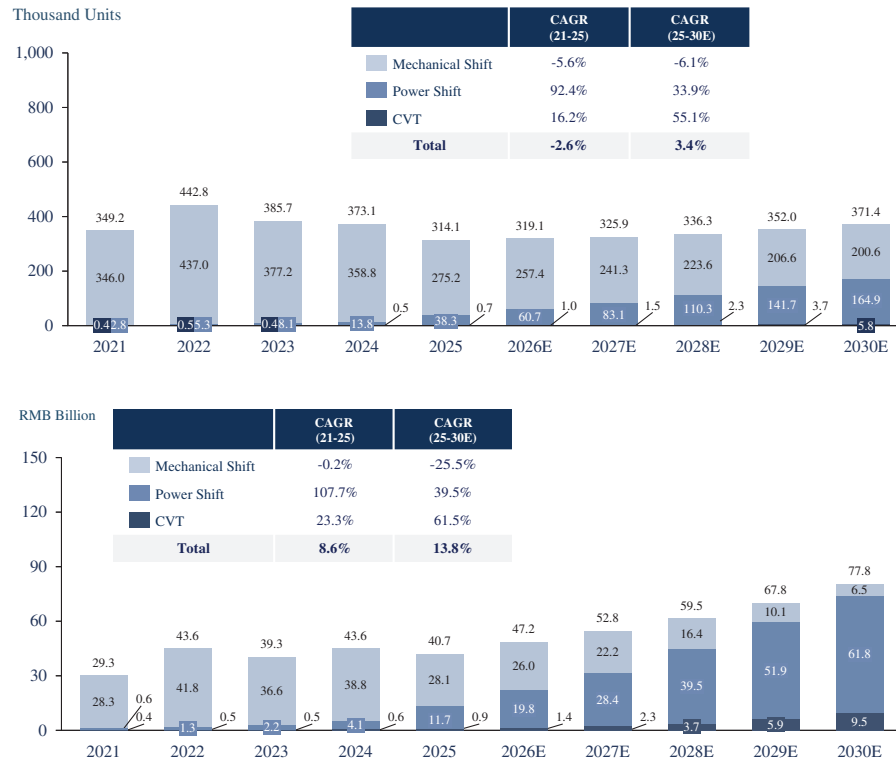


Source: China Association of Agricultural Machinery Manufacturers, Frost & Sullivan

In terms of transmission technologies, tractors can be classified into mechanical shift, power shift, and Continuous Variable Transmission (CVT). Mechanical shift in tractors is comparable to manual transmission in automobiles, requiring frequent clutch-operated gear shifts. It is cost-effective but labor-intensive. Power shift, similar to semi-automatic automotive systems, allows rapid, clutch-free gear shifting via levers or buttons, thereby improving operational efficiency. CVT, comparable to fully automatic automotive systems, enables seamless speed adjustment without discrete gears, offering higher comfort, fuel efficiency, and precision, though associated with the highest technological complexity. In recent years, domestic brands represented by Weichai Lovol have successfully achieved breakthroughs in both power shift and CVT technologies, accelerating their adoption across the domestic market. Power shift tractor sales are projected to grow from approximately 38.3 thousand units in 2025 to approximately 164.9 thousand units by 2030, with a CAGR of approximately 33.9%, reaching a sales amount of approximately RMB61.8 billion by 2030. CVT tractor sales are expected to grow from less than 1.0 thousand units in 2025 to approximately 5.8 thousand units by 2030, with a CAGR of approximately 55.1%, and a sales amount of approximately RMB9.5 billion by 2030, laying a solid foundation for the continued development of intelligent tractor technologies in China.

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Tractor Sales Volume and Sales Revenue (by technology type), China, 2021-2030E



Source: China Association of Agricultural Machinery Manufacturers, Frost & Sullivan

Intelligent Tractor Market Analysis

Intelligent tractors include power-shift and CVT models and generally equipped with advanced intelligent perception systems, electro-hydraulic control systems, ISOBUS technology, remote communication systems, enabling intelligent driving. Autonomous driving is a key technology for intelligent tractor development. Compared to traditional tractors, autonomous tractors offer advantages in economic efficiency, operational safety, and productivity. They can effectively address issues such as rural labor shortages, labor aging, and production-related safety risks. Depending on the level of intelligence, intelligent tractors can achieving a leap from basic assisted navigation to full-scenario autonomous operation. Significant increase in subsidy along with growing policy incentives for power shift tractors and a series of intelligent agricultural machinery promotion policies, coupled with continuous technological innovation by domestic manufacturers, has catalyzed explosive growth in intelligent tractors starting in 2025. By 2030, the penetration rate of intelligent tractors in China's tractor market is expected to reach approximately 46.0%. The development of intelligent tractors is closely related to the trend of increasing horsepower in tractors. The vast majority of intelligent tractors are high-horsepower tractors with 100 horsepower and above. It is projected that by 2030, the penetration rate of intelligent tractors among tractors of 100 horsepower and above will reach approximately 87.4%, and among tractors of 200 horsepower and above, the penetration rate will reach approximately 97.6%.

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Tractor Industry Ranking Analysis

At present, the concentration of the tractor industry in China is relatively high. In terms of tractor sales volume in 2025, the top five manufacturers accounted for 71.5% of the market. Weichai Lovol ranked first with sales of 77.8 thousand units, achieving a market share of around 24.8%.

Ranking and Market Share of Tractors (in terms of sales volume), China, 2025

Rank	Company Name	Sales Volume (thousand units)	Market Share (%)
1	The Company	77.8	24.8%
2	Company A	71.6	22.8%
3	Company E	29.8	9.5%
4	Company F	26.5	8.4%
5	Company B	19.0	6.1%
	Others	89.4	28.5%
	Total	314.1	100.0%

Note: Company E is a company located in Jiangsu, China, primarily engaging in sales of tractors, agricultural implements, and supporting equipment. It was established in 1952 and it is not listed. Company F is a company located in Jiangsu, China, primarily engaging in sales of tractors, harvesting machinery, diesel engines, and generator sets. It was established in 2003 and it is not listed.

Source: China Association of Agricultural Machinery Manufacturers, Frost & Sullivan

In comparison, China’s high-end intelligent tractor segment is more concentrated. In terms of intelligent tractor sales volume in 2025, the top three manufacturers accounted for 79.8% of the market. Weichai Lovol ranked first with sales of 21.7 thousand units, representing a market share of around 55.6%, and maintains a leading position in terms of intelligent technology adoption.

Ranking and Market Share of Intelligent Tractors (in terms of sales volume), China, 2025

Rank	Company Name	Sales Volume (thousand units)	Market Share (%)
1	The Company	21.7	55.6%
2	Company D	5.4	13.9%
3	Company A	4.0	10.3%
	Others	7.9	20.2%
	Total	38.9	100.0%

Source: Frost & Sullivan

Analysis of China’s Harvesting Machinery Market

Harvesting Machinery Market Size

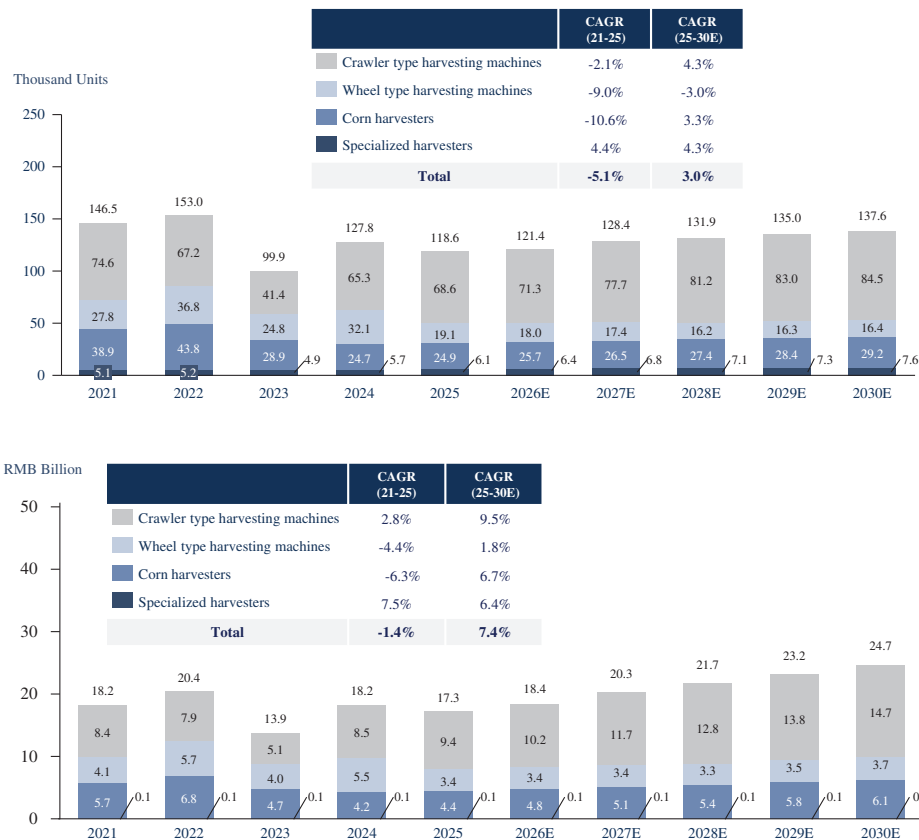
Harvesting machinery refers to agricultural machinery used to collect plant structures such as stems, fruits, seeds, or roots. Based on the target crop and technological characteristics, harvesting machinery can be categorized into single-operation machines and multi-operation combine harvesters. The former refers to harvesters and pickers perform only one task, while multi-operation combine harvesters such as grain combine harvesters and corn combine

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harvesters can complete multiple processes once. Currently, domestic harvesting machinery technology is undergoing a transition toward enhanced precision, intelligence, efficiency, and large-scale. China’s national agricultural modernization strategy is driving the R&D of high-end harvesting machinery, with subsidy increasingly favoring large, smart models.

Based on crop types, harvesting machinery can be classified into machinery for grains (such as wheat, rice, corn and soy beans), forage crops (e.g., green fodder, pasture grass, etc.), root crops (such as potatoes, peanuts and sugar beets), and fruits and vegetables. Among these, other harvesters for economic crops, such as peanut harvester and forage harvester, are collectively classified as specialized harvesters. Among all harvesting machinery, wheel type harvesting machines, crawler type harvesting machines, and corn harvesters represent the dominant product categories in China. In 2025, the sales volume of crawler type harvesting machine, wheel type harvesting machine, and corn harvesters in China were 68.6 thousand units, 19.1 thousand units, and 24.9 thousand units, respectively, with sales revenue of RMB9.4 billion, RMB3.4 billion, and RMB4.4 billion, respectively. The significant decrease in sales volume and sales revenue of harvesting machinery in China in 2023 was mainly caused by advance purchases made by users of harvesting machinery in 2022 to mitigate risks associated with the upgrade of China’s agricultural vehicle emission standards from National III to National IV Emission Standard, which took effect starting December 2022. Looking ahead, these three types of harvesting machinery are expected to maintain steady growth, with sales volume reaching 84.5 thousand units, 16.4 thousand units, and 29.2 thousand units, by 2030, and sales revenue of RMB14.7 billion, RMB3.7 billion, and RMB6.1 billion, respectively.

**Sales Volume and Sales Revenue of Harvesting Machinery
(by crop type), China, 2021-2030E**



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Note: The market size for harvesting machinery in China, as shown in the chart, refers to the sales revenue of key enterprises included in the statistics of the China Association of Agricultural Machinery Manufacturers. Specialized harvesters include other harvesters for economic crops, such as peanut harvester and forage harvester.

Source: China Association of Agricultural Machinery Manufacturers, Frost & Sullivan

Intelligent Harvesting Machinery Market Analysis

Intelligent harvesting machinery generally refers to harvesting machinery equipped with advanced intelligent perception, electro-hydraulic control, precision operation and remote communication systems, with intelligent driving available.

The intelligence level of intelligent harvesting machinery is primarily reflected in the precision monitoring, automated control, and intelligent regulation of harvesting operations. Intelligent harvesting technologies, including satellite positioning, yield detection, task detection, path planning, and decision-making control enabling the automatic identification and tracking of crops, and allowing precise control of the operational range and depth of harvest machinery, which improve both harvesting efficiency and quality.

Currently, China’s intelligent harvesting machinery remains in the early stages of development. The overall penetration rate of intelligent harvesting machines in the harvesting machines market is approximately 29.1%, which is projected to reach 33.3% in 2026 and further increase to approximately 50.4% by 2030.

Harvesting Machinery Market Ranking Analysis

At present, China’s agricultural harvesting machinery industry demonstrates a high level of market concentration. In terms of the sales volume of wheel type harvesting machines in 2025, the top 5 manufacturers collectively accounted for 96.6% of the market share. We ranked first with a sales volume of 12.0 thousand units, holding a market share of approximately 63.2%. In terms of the sales volume of corn harvester in 2025, the top 5 manufacturers collectively accounted for 76.5% of the market share. We ranked first with a sales volume of 6.6 thousand units, holding a market share of approximately 26.6%. In terms of the sales volume of crawler type harvesting machines in 2025, the top 5 manufacturers collectively accounted for 97.4% of the market share. Weichai Lovol ranked second with a sales volume of 21.7 thousand units, holding a market share of approximately 31.7%.

In terms of the sales volume of intelligent harvesting machines in 2025, the top 5 manufacturers collectively accounted for 89.5% of the market. We ranked first with a sales volume of 20.3 thousand units, holding a market share of approximately 58.7%.

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Intelligent Harvesting Machines Market Ranking and Market Share (by sales volume), China, 2025

Rank	Company Name	Sales Volume (thousand units)	Market Share (%)
1	The Company	20.3	58.7%
2	Company B	6.8	19.6%
3	Company G	1.7	4.8%
4	Company C	1.2	3.5%
5	Company H	1.0	2.9%
	Others	3.6	10.5%
	Total	34.5	100.0%

Note: Company G is a company located in Anhui, China, primarily engaging in sales of corn harvesters, grain harvesters, and tractors. It was established in 2011 and its parent company is listed on both the Hong Kong and Shenzhen Stock Exchanges. Company H is a company located in Hebei, China, primarily engaging in sales of corn harvesters and related agricultural machinery. It was established in 2009 and it is not listed.

Source: Frost & Sullivan

Analysis of China’s Agricultural Implements Market

Market Size of Agricultural Implements

Agricultural implements refers to the supporting equipment used in agricultural production, primarily for field preparing, planting, field management, straw handling, grain drying, and other operations. Types of agricultural implements include hydraulic reversible plough, rotary tillers, seeding machines, fertilizer spreaders, sprayers, balers, and agricultural dryers. The market size of China’s agricultural implements was approximately RMB22.4 billion in 2025, and it is projected to further grow to RMB34.5 billion by 2030, with a CAGR of about 9.0% during this period.

Analysis of Intelligent Agricultural Implements Market

Intelligent agricultural implements generally refer to agricultural implements equipped with functions such as operation monitoring, intelligent control, or ISOBUS technology. The degree of intelligence in intelligent agricultural implements is primarily reflected in their capabilities for precise operation monitoring, automated control, and intelligent regulation. For example, precision seeding technology ensures seeds are placed at optimal positions, improving accuracy and efficiency in seeding. Precision fertilization technology allows nutrient application to be tailored to soil nutrient levels and crop needs, reducing waste while conserving resources. Currently, China’s intelligent agricultural implement sector remains in its early stages of development. However, the emergence of intelligent, high-end agricultural implements, such as high-performance intelligent seeders, has been encouraged and supported by subsidy policies. It is expected that the overall penetration rate of intelligent agricultural implements in China will continue to grow steadily, further increasing to approximately 31.0% by 2030.

Drivers for China’s Agricultural Machinery Industry

- 1) ***Grim situation of food security:*** Being a country with a population of 1.4 billion, China has a rigid food demand and is therefore suffering pressure in satisfying the huge demand. The dependency rates of imported oil crops and fodder such as soybeans remained high at 80%. In 2025, China’s total grain imports reached 140 million tonnes. Structural

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shortages have promoted the transformation and upgrade of agricultural productivity and operation models, while urgent need to increase per-unit yield has facilitated rapid growth in the demand for intelligent agricultural machinery and smart agriculture.

- 2) ***Structural changes in labor force:*** China’s rural labor force is undergoing profound structural transformation. The number of agricultural workforce declined to 160 million in 2024, and is projected to further decline to 30 million by 2050. Such decline has caused a sustained increase in agricultural labor costs, and a severe shortage in labor supply. The contradiction of demand for the agricultural workforce is driving the upgrade towards large-scale, high-end and intelligent agricultural machinery.
- 3) ***Deepening the scalable field management:*** The area of land transfer in China increased from 460 million mu in 2016 to 580 million mu in 2024. The government continues to promote the construction of high-standard farmland and driving contiguous land transfer through integration of village collectives. Land transfer has entered a stage of dual-driven development of “scale expansion and quality improvement”. The scaling, intensification, and intelligent upgrading of agricultural operations are accelerating. Large-scale operations are imposing new requirements on agricultural machinery.
- 4) ***Strong national policy support:*** Food security is a top national priority. Given constraints on arable land, only significantly improve the per-unit yield of grains can China remove the bottleneck of grain production. China has identified intelligent agricultural machinery as a strategic tool to safeguard food security. Through systematic policy arrangements, the nation is accelerating the industry’s upgrade. The “Plan for Accelerating the Construction of an Agricultural Powerhouse (2024-2035) (《加快建設農業強國規劃(2024-2035年)》)” and consecutive central No. 1 documents have clearly defined the development direction for agricultural machinery, systematically promoting the comprehensive upgrade of agricultural machinery.
- 5) ***Technological integration and breakthroughs:*** Technological breakthroughs in multiple fields such as electro-hydraulic control, remote communication, cloud computing, and artificial intelligence have been profoundly reshaping the technological system of the agricultural machinery industry. The integration of electro-hydraulic automatic control technology with automatic navigation and ISOBUS technology has achieved a leapfrog improvement in the precision operations of agricultural machinery. The integrated application of perception networks, multimodal visual recognition, AI decision-making algorithms and precision operation technologies has propelled agricultural production from experience-based traditional models to data-driven smart agriculture.

Development Trends of China’s Agricultural Machinery Industry

- 1) ***The transformation and upgrading of traditional agricultural machinery equipment to large-scale, high-end, and intelligent agricultural machinery.*** The scalable field management is driving a surge in demand for large-scale, high-end, and intelligent equipment. In terms of tractors, small and medium horsepower tractors are continuously upgrading to large tractors with over 100 horsepower, with transmission technologies evolving towards power shift and continuously variable transmission. The level of electro-hydraulic control and other intelligent technologies is constantly improving, and automatic navigation technology is being rapidly popularized. China’s agricultural machinery industry is transitioning from selling individual equipment to an technology of the products ecological transformation of “product + service”.

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- 2) ***Rapid development of new energy technology, empowering accelerated intelligence of vehicle.*** China’s new energy agricultural machinery is undergoing a dual acceleration development of technological breakthroughs and policy-driven initiatives. The continuous optimization of battery energy density and intelligent control algorithms, and the gradual improvement of charging infrastructure and the spillover effect of the automotive industry’s “three-electric” supply chain, are driving new energy agricultural machinery from pilot projects to scaled applications. Meanwhile, the precise control of the electric drive system, in-depth interaction of data, continuous evolution of software-defined functions, and the construction of a collaborative ecosystem, will propel the development of agricultural machinery from “mechanical automation” to “digitalization.”
- 3) ***Technological breakthroughs and scenario implementation are spawning a broad market for agricultural robots.*** Agricultural robots are intelligent automated devices designed for agricultural production processes, integrating multiple disciplines such as artificial intelligence, sensor technology, automatic control, and mechanical engineering. As a technological extension of intelligent agricultural machinery, agricultural robots have a high degree of autonomy, with capabilities for environmental perception (such as vision, LiDAR), path planning, and autonomous decision-making. Its core function is to replace or assist manual labor in tasks such as planting, management, harvesting, and sorting to improve efficiency, reduce costs, and achieve precision agriculture. Agricultural robots have main application fields in complex scenarios such as drylands, paddy fields, orchards and facility agriculture. The current market size of agricultural robots in China is approximately RMB240 million, and it is projected to reach about RMB2.5 billion by 2030, with applications gradually being promoted. By 2050, the market is expected to further expand to about RMB68.1 billion, playing an increasingly important role in agriculture in the future.
- 4) ***Smart agricultural technologies are accelerating their development towards integrated technical applications, with an intensified commercialization process seen in smart agricultural services.*** Based on intelligent agricultural machinery and empowered by technologies such as biotechnology, information perception, intelligent decision-making, and precision operation, smart agriculture will drive agriculture from “experience-driven” to “data-driven”. AI technology based on information perception and optimized deep learning algorithms is rapidly penetrating the intelligent agricultural machinery and smart agriculture fields. By integrating multi-dimensional data such as soil, meteorological, and crop growth, as well as building an intelligent decision-making model covering the whole process from field preparing, planting, managing to harvesting, the smart agriculture management platform enables the intelligent agricultural machinery to achieve precision operation, thereby efficiently contributing to the increase in per-unit yield and the green and sustainable development.
- 5) ***China’s agricultural machinery exports are entering a strategic opportunity period, combining emerging market expansion with rising global competitiveness.*** In recent years, China’s agricultural machinery export volume has continued to expand, with products accelerated their penetration into the global market thanks to their high cost-performance advantage. The export map has expanded to more than a hundred countries and regions worldwide, with significant growth in emerging markets such as Southeast Asia, Latin America, and Africa. The next 5-10 years will be a strategic opportunity period for Chinese agricultural machinery to go global, due to continued national policy dividends.

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Entry Barriers for China’s Agricultural Machinery Industry

- 1) **Barrier to Understanding Agricultural Application Scenarios.** Agricultural application scenarios are complex and variable, covering different crops, soil types, and climatic conditions, with significant differences in crop varieties and farming practices across regions. A deep understanding of agricultural machinery operation scenarios requires long-term practical experience. Agricultural machinery data and farming practices data are core assets for enterprises and constitute the core competitiveness of leading agricultural machinery companies.
- 2) **Customer and Brand Barriers.** Customer structure of the agricultural equipment market has undergone profound changes. The proportion of individual machine operators purchasing agricultural machinery has been declining, while professional machine operators, agricultural machinery cooperatives and socialized service organizations have emerged as the primary buyers. The primary considerations in purchasing agricultural machinery are performance, reliability, and brand. Building brand recognition requires long-term, large-scale market validation and the accumulation of users’ praises.
- 3) **Service Barrier.** Agricultural production has distinct seasonality, and agricultural machinery companies must have the flexibility to meet the surging seasonal service demands, especially demands from customers engaged in cross-regional operations who heavily rely on 24/7 response, rapid repairs and spare parts supply. Building nationwide service networks, developing professional service teams, and establishing digital service platforms (such as remote monitoring and fault warning systems) all require continuous financial investment and prolonged time period.
- 4) **Talent Barrier.** The industry faces dual challenges of a shortage of multi-disciplinary talents and an incomplete talent development system. The research and development of intelligent agricultural machinery requires personnel with both mechanical engineering and information technology backgrounds, but the related interdisciplinary programs are relatively underdeveloped in universities, resulting in a limited number of graduates annually. On the corporate side, the training period for technical personnel with practical field experience is lengthy, typically 3 to 5 years.
- 5) **Technical Barriers.** Enterprises need to engage in long-term technological R&D, field trials, and continuous improvement to develop high-reliability, adaptive products. Due to strong seasonality of agricultural machinery operations, usually with annual effective operating window under two months, new entrants often need several years of accumulation to launch mature models. The technical barriers in the intelligent agricultural machinery field are even more prominent, mainly reflected in the integration of multi-disciplinary technologies and the ability for rapid iteration.

Analysis of China’s Agricultural Machinery Import and Export

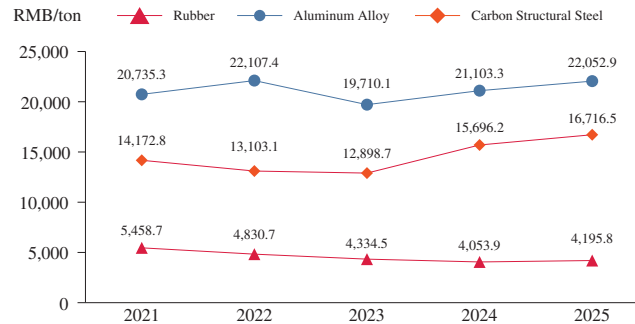
With the continuous enhancement of China’s agricultural machinery industry in terms of technological level, domestic production capacity, and global competitiveness, the export value of China’s agricultural machinery has shown a gradual upward trend. Tractors are China’s most prominent agricultural machinery export product. In terms of export volume in 2025, Weichai Lovol ranked first with export volume of 13.3 thousand units, achieving a market share of about 28.3%.

INDUSTRY OVERVIEW

Analysis of Agricultural Machinery’s Raw Materials

Generally, the prices of raw materials for agricultural machinery were relatively stable with slightly upward trends. The prices of rubber, aluminum alloy and carbon structural steel from 2021 to 2025 are indicated in the chart as below.

Price of Agricultural Machinery’s Raw Materials, China, 2021-2025



Source: Frost & Sullivan

OVERVIEW OF CHINA’S SMART AGRICULTURE INDUSTRY

Smart agriculture is a new agricultural production and management model based on intelligent agricultural machinery and integrating biotechnology, information technology, artificial intelligence and big data technology to enable digital sensing, intelligent decision-making, precision operations and smart management across the entire agricultural production process. An integrated smart agriculture solution is a systematic solution providing a suite of intelligent agricultural equipment and digital, interconnectivity services grounded on the industrial essence of smart agriculture. Based on technological applications and functional attributes, an integrated smart agriculture solution primarily includes intelligent agricultural machinery and smart agriculture services. Smart agriculture services encompass comprehensive agricultural monitoring systems, precision operation systems, and smart agriculture management platforms.

From 2021 to 2025, the global market size for integrated smart agriculture solutions expanded from RMB636.0 billion to RMB716.0 billion, representing a CAGR of 3.0%, which is projected to grow further to RMB861.9 billion by 2030. From 2021 to 2025, China’s market size for integrated smart agriculture solutions expanded from RMB3.1 billion to RMB24.6 billion, representing a CAGR of 68.3%. Policy support and market demand will drive the accelerated development of smart agriculture in China. China’s smart agriculture will gradually transition from pilot demonstrations to large-scale applications. It is projected that by 2030, the market size for integrated smart agriculture solutions will reach RMB118.5 billion, with smart agriculture services accounting for RMB15.7 billion.